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The Ohio Extension Service conducted "in-depth" schools on Dairy Genetics and Reproduction, Beef Cattle, Capital Management, and Fertilizer and Lime at area centers in Wooster, Defiance and Fremont, Washington Court House, and McConnellsville. Two thirds of the instructional staff were area agents: others were specialists, resident staff, research personnel, and industry representatives. The major audience were full time commercial farmers, 90% of whom were high school graduates, 1/3 having some college: 3/4 had recently been involved in other extension activities. Most had had contact with extension agents during the three previous years, 10% having office or telephone contact with area agents. The school directed toward fertilizer dealers drew both large and small dealers, most of whom had learned about the school from extension agents. Participants made significant gains in subject matter knowledge and planned to try new ideas, particularly cash flow analysis. The programs were considered a success. (se)

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# AN ANALYSIS OF "IN-DEPTH" SCHOOLS CONDUCTED BY AREA EXTENSION AGENTS IN THE AGRICULTURAL INDUSTRY

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## Introduction

The Area Extension Center concept was initiated in 1965 by the Ohio Cooperative Extension Service. At that time eight centers were established, covering only a portion of Ohio's 88 counties. The state was re-organized for supervisory purposes effective January 1, 1968 at which time area center boundaries were adjusted so that ten area centers served the entire state.

The focus in the area Extension centers has been on the agricultural industry. This is evident in the present staffing patterns which indicate that 72 per cent of all anticipated positions are those in specialized agricultural industry areas. These agents develop programs focusing on agricultural production, management and marketing for farmers and those in agri-business. The remaining staff positions are in community resource development and 4-H club work

The staff members in the agricultural industry have seen as highest priority the following job responsibilities:[1]

1. Plan and conduct educational activities on an area wide basis.
2. Organize area wide industry committees for program planning.
3. Assist county Extension agents in conducting educational activities within the county.
4. Provide news, radio and television releases relating to specialized field.
5 Report needs for research to subject matter department.
6. Carry on applied research.

[1]Robert W. McCormick, An Exploratory Analysis of the Ohio Area Extension Center Approach Six Months After Establishment, mimeograph, Ohio Cooperative Extension Service, October, 1965.

It is within the realm of the first responsibility -- "Plan and conduct educational activities on an area wide basis" -- that this study was conducted.

The use of in-depth schools in the area Extension programs has been an integral part of the center programs since initiation of the area centers. McCormick defines this as a recent innovation of Ohio Extension programming.

> In-depth teaching was defined as the development of educational experiences based upon specific teaching objectives in a clearly defined content area. Further, this educational innovation implied a series of sequential learning experiences with the same audience extending over a period of time with each subsequent experience "building upon" the learning achieved by the participants in the previous setting. This approach was dedicated to the increased understanding of central concepts or principles in a specialized content area and the application of these principles to "life" situations rather than a "how to do it" or "quick answer" meeting.[2]

Each in-depth school was established by the area Extension agent in consultation with state specialists, county agents, supervisors, and appropriate lay people. Leidheiser[3] reported that 62 per cent of area agents in the agricultural industry are now using area planning committees from which one can infer that some lay people were involved in planning. Each of the area in-depth schools was directed at a specific audience to meet that audience's specialized needs.

[2]Robert W. McCormick, Analysis of 'In-Depth' Schools Conducted by Area Extension Agents, mimeograph, Ohio Cooperative Extension Service, May, 1966.

[3]Paul Leidheiser, "Program Development Usage by Area Extension Agents in the Agricultural Industries," mimeograph, Ohio Cooperative Extension Service, April, 1968.

## Objectives of the Investigation

The objectives which guided this investigation were:

1. To identify selected characteristics of the participants in area in-depth schools.
2. To determine the degree to which the stated teaching objectives for the area in-depth schools were achieved.
3. To determine the participant change in knowledge of the subject matter presented in the area schools.
4. To determine anticipated practice changes as the result of the in-depth schools.
5. To determine what staff members are teaching in area schools.

## Method of Investigation

The methodology used in this study could be categorized as an "investigation," which represents a small degree of research sophistication as explained by Guba.[4] "Investigations" lack both internal and external validity. Interpreted, this means that the researcher and reader must be careful about generalizing to other populations and the specific findings should be treated as suggestive rather than conclusive. With this amount of a caveat emptor signal, the writer will proceed with the methodology.

[4]Egon G. Guba, "Experiments, Studies, Surveys and Investigations," Educational Research: New Perspectives, ed. Jack A. Culbertson and Stephen P. Heneley (Danville, Illinois: The Interstate Printers and Publishers, Inc., 1963), pp. 242-245.

Four area in-depth schools are included in this investigation. These schools were conducted at 11 locations. The schools studied were:

Dairy Genetics - Reproduction School

Beef Cattle School

Capital Management School

Fertilizer and Lime Dealer School

These schools were selected in consultation with district supervisors to secure schools in each section of the state as well as different types of subject matter and audience. The schools were at the following locations:

Wooster Area Center - Three locations in area

Defiance and Fremont Area Centers - One location in area

Washington Court House Area Center - Three locations in area

McConnelsville Area Center - Four locations in area

The investigator consulted with the area Extension agents regarding the nature of each in-depth school and what evaluative material was needed for this investigation. It was not possible to collect precisely the same evaluative material regarding each school because of the nature of the specific programs and audiences.

In each school a standard form was provided for completion by all participants to obtain background information and characteristics of the participants. In the case of the agri-business audiences, this form had to be adapted from the standard one.

In three of the area Extension centers, specific knowledge

tests were developed for each subject matter school. These tests were developed by the area Extension agent and specialists who taught in the school, being edited in some cases by the investigator. Each test was administered at the beginning of the school as a "reaction form." The questions used were normally of the agree-disagree, multiple choice and completion nature. The same form was used at the end of each school to gain a post reading of the participants' knowledge in the subjects being taught.

In addition to background characteristics and knowledge tests other information was collected.

1) Forms were developed to gain a reaction as to how helpful the school was regarding its objectives. A six-point scale from "most helpful" to "little or no help" was used for this purpose.

2) Participants in schools were requested to identify what new practices they might use as a result of participating in the school. This was an open end question.

3) The area Extension agents also collected information on whether to hold future schools and on what topics.

## Major Findings

The discussion which follows does not attempt to present all the data collected in the area school evaluations. Presented is that data which pertains to the objectives of this specific investigation.

### Background and Characteristics of the Participants

A total of 307 individuals attended these four schools at 11 locations on the night the evaluation form was completed regarding background information. Additional enrollees attended other

sessions not included in the following analysis. The average attendance at each location was 27.9, with a range of nine to 77. This average compares with 75.2 reported in a study in 1966 in Ohio[5].

Occupation

At seven locations the in-depth schools were directed toward farmers and at one location the school was directed toward agri-business men. Three schools were directed toward a combination of farmers and agri-business representatives.

The data for this investigation show the following distribution:

| | | |
|---|---|---|
| Full-time Farmers | | 53.4% |
| Part-time Farmers | | 27.7% |
| Agri-Business | | 10.1% |
| Sales and Service | 7.2% | |
| Marketing | 2.3% | |
| Credit | .6% | |
| Other | | 8.8% |
| Total (n=307) | | 100.0% |

The major audience of area in-depth schools continues to be full-time farmers. Part-time farmers represent over one-fourth of the total while agri-business people are one-tenth of the group. Those in the "other" category were primarily teachers of vocational agriculture and high school students.

[5]McCormick, An Analysis...,4.

This occupational analysis differs considerably from the previous study[6] which reported serving a higher per cent of full-time farmers (62.2%) and agricultural industry personnel (25.7%). Only 9.1% part-time farmers were reported in that study.

This difference in occupation of enrollees in in-depth schools may be attributed to: 1) there were no schools in the earlier study located in Southeastern Ohio (88 per cent of all part-time farmers in this study were in the school offered in Southeastern Ohio) and 2) a higher percentage of the earlier schools (40 per cent compared to 27 per cent) were directed specifically toward agri-industry representatives.

Formal Education

The formal education of the clientele served is one indication of the extent to which in-depth schools can be directed toward a highly sophisticated audience. The level of education is presented below along with the data collected by McCormick in 1965.

| | 1965[7] (n=376) | 1968 (n=281) |
|---|---|---|
| High School Graduate | 52.3% | 53.0% |
| College Graduate | 19.0% | 14.2% |
| Some College | 16.0% | 17.5% |
| Some High School | 6.6% | 9.6% |
| More than B.Sc. degree | 3.8% | 1.4% |
| Eight years or less | 2.3% | 4.3% |

The level of education of those participating in area center

[6]McCormick, An Analysis...,4.

[7]McCormick, An Analysis...,5.

in-depth schools continues to be at a "high" level, since nearly 90 per cent are high school graduates and one-third of the participants have had some college education. There was a decrease in the per cent who had attended college from the earlier study in 1965. This may be partially attributed to the fact that the educational level of those in Southeastern Ohio is not as high as those from other parts of the state (28 per cent attending college compared with 39 per cent) and the 1965 study did not include any in-depth school in Southeastern Ohio.

These data do suggest that in-depth schools can be conducted at a fairly high degree of sophistication. They also point out that a "standard" school cannot be used throughout the state. Adaptations need to be made upon the nature of the audience and the agriculture of each section of the state. The use of area Extension agents may permit this adaptation more easily than using only state specialists as in past years.

Age

The average age of the 281 individuals reporting their age was 40. This is a decrease of four years from the 1965 study.

Prior Educational Experiences in Agriculture

To determine previous contact with educational programs in agriculture, 157 participants reported their involvement in a number of different types of educational programs.

| | |
|---|---|
| Participated in Cooperative Extension Service Activities in Last Three Years | 75.8% |
| Attended Field Days of OARDC | 68.8% |
| Participated in 4-H Work | 65.0% |
| Enrolled in High School Vocational Agriculture | 40.8% |
| Attended a College of Agriculture | 22.3% |
| Attended a College of Agriculture Short Course | 12.7% |

The area Extension center programs continue to reach clientele who recently have been involved in other Extension or research center field days, with approximately three-fourths involved in this type of experience recently. This may be interpreted as the "satisfied customer" returning to do more business.

At the same time, the data suggest that some new clientele are being reached. With such a large per cent involved in Cooperative Extension programs, it was only natural to inquire as to the types of contacts with area and county Extension agents.

Nature of Cooperative Extension Service Individual Contact

The following data indicate the nature of individual contacts participants have had with county and area agents during the past three years. The percentages given are computed on the basis of all enrollees responding (n=307).

| | Contact With County Agents | Contact With Area Agents |
|---|---|---|
| Called at Extension Office to Obtain Information | 61.6% | 10.1% |
| Called Extension Office by Telephone | 55.7% | 9.8% |
| Extension Agent Has Visited Farm or Business | 40.1% | 18.6% |
| Served as 4-H Advisor | 14.0% | NA |
| Served on Extension Planning Committee Other Than Extension Advisory Committee | 9.8% | 3.9% |
| Served on County Extension Advisory Committee | 7.5% | NA |
| No Contact with Extension Agents | 7.2% | 6.5% |
| Served on State Extension Advisory Committee | 1.0% | NA |

These data suggest that the in-depth schools draw upon the clientele who were acquainted recently with Extension in some other way. This is evident when you note that less than 7 per cent have had no contact with Extension in the last three years.

One would expect a mugh higher per cent to have contact with county agents than area agents since there are more county agents. With the relatively new area program, it is interesting to note that 10 per cent had made office or telephone contact with area agents. Also interesting is that nearly 20 per cent had been

contacted at their place of business by area agents.

Since only four per cent (this would average one person per school) of the participants had served on area planning committees, one might conclude that area agents either used planning committees on a very limited basis for these schools, or else those on planning committees did not attend the school.

Participants who reported they had called at an Extension office rather than on the telephone may reflect the desire to gain in-depth understanding rather than just quick telephone information.

Size of Farm

The size of farm was reported in the three Northeastern Ohio schools and three Southwestern Ohio schools. Of the 130 individuals reporting, the average size of owned land was 249 acres and rented land was 155 acres, which was almost identical with a previous study. Southeastern Ohio schools were not included in either study.

Gross Income from Farming

At the schools where farmers were enrolled they were requested to report their gross income from farming. The percentages of respondents (n=218) in each level of gross income is reported below.

| Gross Income | Total n=218 | NE Ohio n=101 | SE Ohio n=92 | SW Ohio n=25 |
|---|---|---|---|---|
| Less Than $10,000 | 41.7% | 12.9% | 79.3% | 20.0% |
| $10,000 to $19,999 | 16.1% | 14.8% | 16.3% | 20.0% |
| $20,000 to $29,999 | 17.9% | 29.7% | 3.3% | 24.0% |
| $30,000 to $39,999 | 12.4% | 20.8% | 1.1% | 20.0% |
| $40,000 and over | 11.9% | 21.8% | 0 | 16.0% |

From the above data it can be observed that approximately

60 per cent of those attending schools were what is classified as commercial farmers - $10,000 gross or more. The per cent in Northeast and Southwestern Ohio was much higher. Only slightly over 10 per cent were grossing above $40,000. This compares with 27 per cent reported in an earlier study[8]. This difference may be partially due to a new area of the state being added in this study or the fact that all schools are now reaching more people with a little lower income.

Size and Type of Agribusiness

Since the one in-depth school was directed specifically toward fertilizer dealers, some attempt was made to analyze the type of their business. One measure of a fertilizer dealer business is tons of fertilizer sold. Five of the enrollees in the one school did not sell fertilizer direct. The remaining 14 had a volume of business as follows:

| Tons of Fertilizer Sold | Number of Enrollees |
|---|---|
| Less than 1,000 | 3 |
| 1001-1500 | 2 |
| 1501-2000 | 0 |
| 2001-2500 | 0 |
| 2501-3000 | 2 |
| 3001-3500 | 2 |
| 3501-4000 | 1 |
| Over 4000 | 4 |

[8]McCormick, An Analysis...,8.

These data would indicate that this school served both large volume dealers and those who were relatively small. Of those selling fertilizer direct about 64 per cent were large volume dealers.

Most of the fertilizer dealers in this school sold bagged and blended fertilizer. Nearly all sold herbicides and insecticides. Over half sold anhydrous and liquid fertilizer.

How Participants Learned About In-Depth Schools

The enrollees were asked from what sources they had learned about the in-depth schools. The summary of these data is found below:

| | |
|---|---|
| Notice from County Extension agents | 68.7% |
| Notice from Area Extension agents | 31.6% |
| Newspaper, radio, or T.V. announcement | 30.9% |
| From a neighbor or friend | 8.3% |
| Other | .3% |

County Extension agents were the primary contact in enrollees' learning about the schools. Apparently county agents are fulfilling actively a responsibility to support area Extension schools. It is surprising that such a small per cent are contacted by neighbors or friends, but then the mailing lists of county and area agents may sufficiently complete to reach most farmers directly. Vocational agriculture teachers were the primary contact reported as "other" in the above data.

Participants were also requested to indicate why they enrolled in the school. Forty-five per cent were interested in new

developments, 37 per cent in basic principles, and 13 per cent were influenced most by wanting to hear a specific resource person.

## Degree of Satisfaction With School

At four of the area in-depth schools participants were asked to react as to how much help they had received from specific aspects of the in-depth school. A rating of 6 was most helpful while a rating of 1 reflected little or no help.

At the fertilizer dealer school the mean weighted rating ranged from 5.11 to 3.76 on 14 different content areas of the school.

At the three capital management schools respondents rated the six objectives of the school as to how helpful it had been to them, again on a 6 point scale. The mean weighted rating ranged from 5.4 to 4.8.

The ratings of these four schools reflect much help received from having attended.

## Pre and Post-Response Forms

Pre and post-response forms were administered to the participants in seven of the schools to measure understanding of basic concepts in the subject matter fields. The response forms which were used had no validity or reliability checks made on them so the results cannot be treated as highly sophisticated research data. The response forms were developed by those teaching the schools and so reflected a degree of content validity in that they covered the subjects being taught.

The use of pre and post-response forms cannot be used to make conclusive judgements of the value of a school since the pre-response permits the teacher to adjust his teaching and the pre-form may condition participants to learn more since they begin to wonder about the questions being asked. However, if a response form stimulates thinking, then it is successful for any testing should be an integral part of the learning process.

The pre and post-response data for three capital management, three dairy industry and one fertility school are presented below:

| | Pre Test | | Post Test | |
|---|---|---|---|---|
| | N | % Correct | N | % Correct |
| Dairy Genetics (3) | 92 | 32.9 | 83 | 57.6 |
| Capital Management (3) | 31 | 58.8 | 23 | 77.5 |
| Fertility (1) | 19 | 61.7 | 19 | 70.0 |

The reader can notice a substantial increase in percentage correct to the questions asked on the pre and post-response forms at all seven schools where such forms were used. These data support the fact that participants do learn from participating in the in-depth schools held by the Ohio Cooperative Extension Service.

It can be observed that the participants had a relatively low level of knowledge of basic principles and that much opportunity is present for further learning.

The other observation of this procedure is that adult participants do not object to the taking of tests for evaluation and/or discussion purposes. However, those teaching in-depth schools need to use discretion as to the timing for giving tests so the learner is properly conditioned and more interested in unrelated activities.

## Anticipated Practice Changes

In four of the schools the participants were asked to indicate what new ideas they might try as a result of participating in the in-depth school. The following comments reflect the type made at the capital management school:

1. Look at cash flow analysis
2. Maintain more adequate records
3. Better budgeting of capital needs
4. More careful decisions on capital purchases

These items reflect a summarization of many specific comments. The most frequently mentioned item was on "cash flow." The writer assumed that the teachers of these schools helped the participants see how they can easily use a cash flow analysis. All the anticipated changes reflected the kinds of changes the instructional personnel had hoped to achieve.

The anticipated use of new ideas in the fertilizer and lime dealer school included:

1. Help farmers understand and use soil tests
2. Encourage plant analysis
3. Use soil type information in advocating fertility
4. Encourage use of micro-nutrients if needed
5. Keep more records of small groups of farmers
6. Develop better fertility programs for farmers

These comments, although highly condensed, reflect the type of outcomes that might be desired of those dealers attending such an in-depth school.

If the farmers and dealers attending the above four schools do adopt the new ideas they planned to use, then these schools should be considered as highly effective.

## Personnel Engaged in Teaching

The actual direct teaching done in the area schools was by area agents (62%), specialists (19%), resident staff (13%), research personnel (4%) and industry representatives (2%). These data reflect the active teaching role of area Extension agents.

## Conclusions

The following conclusions are drawn from this analysis of area in-depth schools:

1. In-depth school participants were satisfied with the helpfulness of in-depth schools.
2. Participants learned a substantial amount during the in-depth schools related to the subjects taught.
3. The enrollment in area Extension in-depth schools has decreased in the last two years.
4. The attendance at in-depth schools remains "high" for in-depth teaching where much work time and individual help is given.
5. Full and part-time farmers constitute the major audience of in-depth schools except where the school is designed specifically for another industry audience.
6. Most clientele reached in Southeastern Ohio consider themselves part time farmers.
7. As evident by size of farms and gross income from farming, the target audience of in-depth schools was primarily commercial farmers.

8. The educational level of participants was at a high level.

9. A majority of the participants had previous contact with the Extension Service.

10. Participants (over half) have had contact with county and area agents on their farms or at their places of business.

11. Very few participants have served on area planning committees.

12. The county Extension agents are the most frequent source of information about area schools, followed closely by area agent contact.

13. The area Extension agents did most of the direct teaching, with supporting help from specialist, research and resident personnel.

## Recommendations

Considering the conclusions of this study, a previous study, and comments received from area agents, the following suggestions are made:

1. In-depth schools should coniinue to be held on a multi-point basis within an area in order to maintain the most effective teacher-learner ratio which permits maximum interaction.

2. Area schools directed toward "current developments" might well be conducted on larger geographic areas or through television schools.

3. More area schools should be designed directly for those engaged in agricultural industries related to farming.

4. More use should be made of planning committees which include representative lay participants.

5. Follow-up contact with participants in the schools is a must - either by area or county agents.

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